PATENT CLAIMS

1. Method of determining refractive index of an object compared to a refractive index of a surrounding medium, **characterized** by

exposing said sample to a laser object beam and letting the object beam interfere with a laser reference beam to obtain a hologram,

analyzing the hologram for phase information,

determining if the refractive index of the object is higher or lower than the refractive index of the surrounding medium based on said phase information.

2. The method as claimed in claim 1, **characterized** in that said analyzing and determination are performed by a computer.

3. The method as claimed in claim 1 or 2, **characterized** by

said object comprising particles of a first substance having a first refractive index and a second substance having a second refractive index and a medium having a refractive index between said first and second refractive index;

counting the number of particles having a first refractive index and counting the number of particles having a second refractive index in a specific area of said sample.

4. A device for determining refractive index of an object compared to a refractive index of a surrounding medium, **characterized** by

a laser source for exposing said sample to a laser object beam and letting the object beam interfere with a laser reference beam to obtain a hologram,

a computer for analyzing the hologram for phase information, and for determining if the refractive index of

the object is higher or lower than the refractive index of the surrounding medium based on said phase information.

5. The device as claimed in claim 4, **characterized** in that

said object comprising particles of a first substance having a first refractive index and a second substance having a second refractive index and a medium having a refractive index between said first and second refractive index; and

said computer is arranged to count the number of particles having a first refractive index and the number of particles having a second refractive index.

6. Computer program arranged on a tangible medium for execution on a computer for performing at least one of the method steps of any one of claims 1 to 3.

7. Use of the method of any one of claims 1 to 3 for the separation and counting particles in a particle blend.

8. Use of the method of any one of claims 1 to 3 for calculating the volume ratio between particles in a particle blend.